AND1743FST-T

240 x 128 Dots
Intelligent Graphics Display

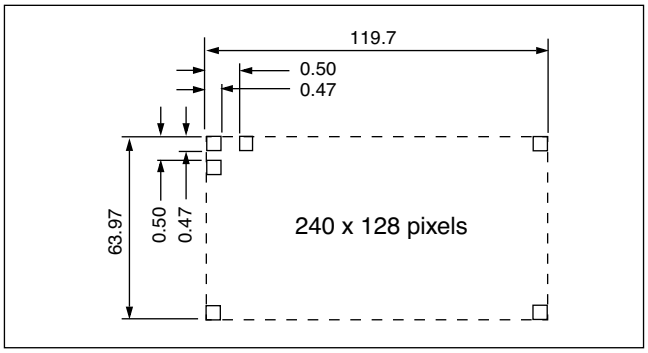
The AND1743FST-T devices are compact, full dot matrix, with “white page” appearance, LCD modules that have an on-board LCD controller (T6963C) and display memory (RAM). The AND1743FST-T can display TEXT information, numerals, letters and symbols, as well as GRAPHIC patterns. These devices are suitable for medical and measurement equipment, point-of-sale terminals, portable equipment, and marine instrumentation.

Features

• RoHS Compliant

- FSTN positive black and white LCD type
- Transflective Rear Polarizer
- Built-in CCFL backlight
- 40 characters x 18 line capability
- 240 x 128 dot graphic display
- Excellent readability and high-contrast ratio
- 6 o’clock viewing direction
- Wide operating temperature range (-20° to +70°C)
- White backlight color, black frame

Dot Matrix Dimensions



Mechanical Characteristics

Item	Specification	Unit
Outline Dimensions	170.0 (W) x 102.0 (H) x 14.0 Max (D)	mm
Number of Dots	240 x 128 Dots (40 characters x 16 lines)	
Duty Ratio	1/128 Duty	
Viewing Area	132.0 (W) x 76.0 (H)	mm
Controller	T6963C/Toshiba	
Dot Size	0.48 (W) 0.48 (H)	mm
Dot Pitch	0.50 (W) 0.50 (H)	mm
Weight (approx.)	tbd	gram

Absolute Maximum Ratings

	Absolute Maximum			
Item	Symbol	Min	Max	Unit
Power Supply for Logic	V_{DD}- V_{SS}	-0.3	7.0	V
Power Supply for LCD	V_{DD} - V_{EE}	0	24.0	V
Input Voltage	V1	-0.3	V_{DD}	V
CCFL Driving Voltage(1)	V_{FL}	0	500	V_{rms}
CCFL Input Current	I_{FL}	–	7.0	mA
Normal Storage Temp.	T_{stg}	-20	70	°C
Normal Operating Temp.	T_{op}	0	50	°C
Wide Storage Temp.	T_{stg}	-30	80	°C
Wide Operating Temp.	T_{op}	-20	70	°C

Notes on Humidity (without condensation):

1. Ta ≤ 50 ºC: 80% RH max; ta > 50ºC: Absolute humidity must be lower than the humidity of 85% RH at 50ºC (for Normal Operating Temp.)
2. Ta at -20ºC will be <48 hrs; at 70ºC will be < 120 hrs when humidity is higherthan 75% (for Normal Storage Temp.)
3. Background color changes slightly depending on ambient temperature. This phenomenon is reversible (for Normal Operating Temp, Wide Operating Temp and Wide Storage Temp.)
4. Ta ≤ 70ºC: 75RH max; Ta> 70ºC: absolute humidity must be lower than the humidity of 75% RH at 70ºC (for Normal Storage Temp and Wide Operating Temp.)
5. Ta at -30ºC will be <48hrs, at 80ºC will be <120 hrs when humidity is higher than 75%.(for Wide Storage Temp.)

Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

Electrical Characteristics (TA = 25°C)

Item	Symbol	Cond.	Min.	Typ.	Max.	Unit
Power Supply for Logic	V_{DD} - V_{SS}		4.5	5.0	5.5	V
Input Voltage	V_{IL}	L level	0	—	0.6	V
	V_{IH}	H level	2.2	—	V_{DD}	
	–	Ta = 0ºC	—	—	—	
	–	Ta = 25ºC	16.9	17.2	17.5	
	–	Ta = 50ºC	—	—	—	
Power Supply Current for LCM	I_{DD}	V_{DD} = 5.0V V_{DD} - V_{EE} = 17.2V	—	15.6	18	mA
	I_{EE}		—	2.4	—	
CCFL Starting Voltage	V_{FLS}	—	—	750	—	V_{rms}
CCFL Driving Voltage	V_{FLD}	—	—	360	—	V_{rms}
CCFL Driving Current	I_{FLD}	V_{FLD} = 450 Vrms f_{FL} = 30kHz	—	5.0	—	mA
CCFL Driving Fre-quency	f_{FL}		15	30	85	kHz
CCFL Driving Current	t_{SAT}	Ta = 25ºC	—	1	—	minute

Optical Characteristics (TA = 25°C, ϕ = 0°, θ = 0)

Item	Symbol	Min.	Typ.	Max.	Unit
Viewing Angle Range (1)	Φ f(12 o'clock)	–	34	–	degree
	Φ b (6 o'clock)	–	41	–	
	Φ l (9 o'clock)	–	35	–	
	Φ r (3 o'clock)	–	30	–	
Rise Time(2)	Tr	–	140	–	mS
Fall Time(2)	Tf	–	240	–	
Frame Frequency(2)	Frm	–	64	–	Hz
Contrast(2)	Cr	–	5.2	–	-

Note 1:Condition: When Cr ≥ 2
Note 2: V_{DD} - V_{EE} = 17.2V; Ta = 25ºC

Connector Pin Assignment

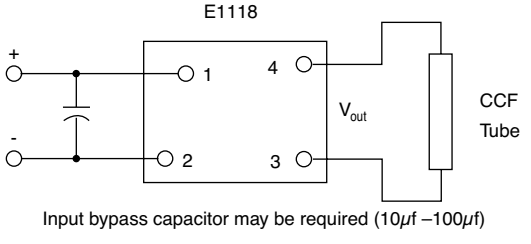
Pin No.	Signal	Level	Function
1	FGND	–	Frame Ground
2	V_{SS}	0V	Power Supply Ground
3	V_{DD}	5V	Power Supply Voltage
4	V_O	–	Contrast Adjustment Voltage
5	/WR	L	Write Signal
6	/RD	L	Read Signal
7	/CE	L	Enable Signal
8	C/D	H/L	WR = "L", C/D = "H": Command Write WR = "L", C/D = "L": Data Write RD = "L", C/D = "H": Status Read RD = "L", C/D = "L": Data Read
9	NC	–	No connection
10	/RST	L	Reset Signal
11	DB0	H/L	Data Bit 0
12	DB1	H/L	Data Bit 1
13	DB2	H/L	Data Bit 2
14	DB3	H/L	Data Bit 3
15	DB4	H/L	Data Bit 4
16	DB5	H/L	Data Bit 5
17	DB6	H/L	Data Bit 6
18	DB7	H/L	Data Bit 7
19	FS	H/L	H: 6*8/L: 8*8 Select of Font
20	RV	–	Reverse Data IN

FL Connector

Pin No,	Signal	Function
1	V_{FL}	Power supply for FL backlight
5	V_{FL}	Power supply for FL backlight

Note: Connector: IL-G-55-53C2, Japan Aviation Electronics Industry. Mating Housing: IL-M-5P-S3C2-PM. Contact: IL-M-C2.

Recommended FL Inverter



Input bypass capacitor may be required (10μf –100μf)

Part number E1118 is Endicott Research Group, Inc.. Method of connecting is illustrated.

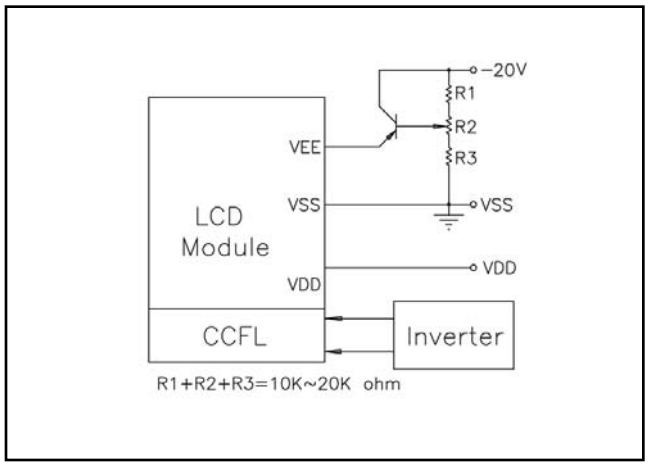
Power Supply

LCD panel is driven by the voltage V_{DD}–V_{EE}, so adjustable V_{EE} is required for contrast control and temperature compensation.

Temperature Variations

Temperature	V_{DD}–V_{EE} (MST)	V_{DD}–V_{EE} (BST)
0°C	21.0	20.0
+25°C	19.5	18.5
+50°C	17.6	16.6

Power Supply

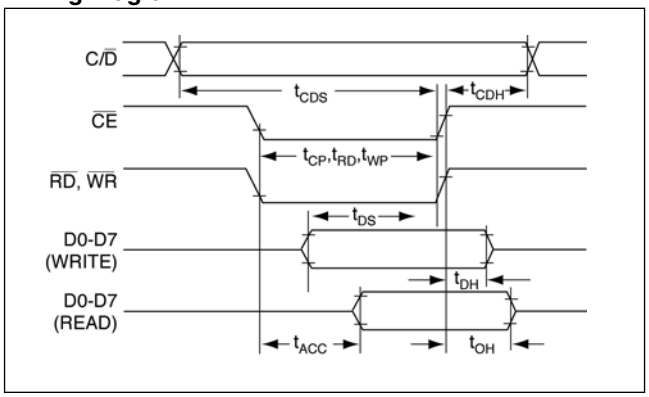


Timing Relationships and Diagram

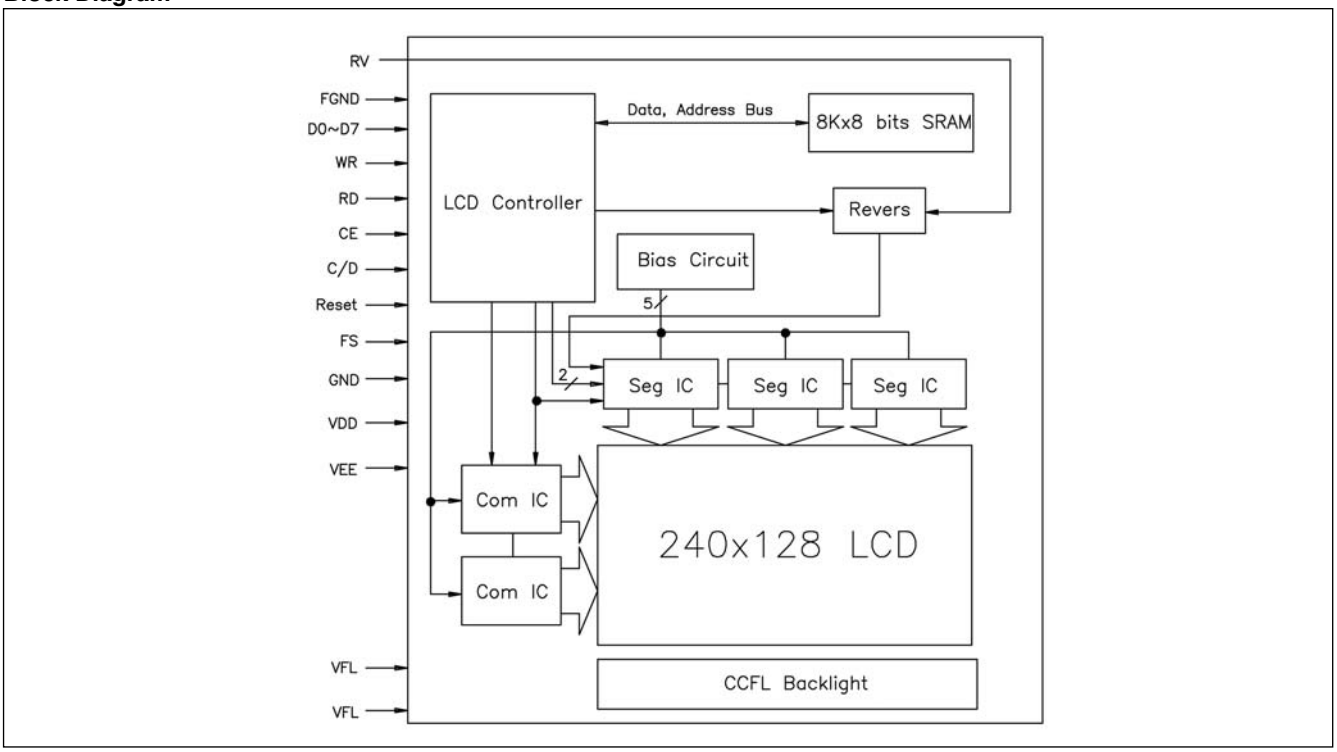
Signal Timing Relationships

Item	Symbol	Min.	Max.	Unit
C/D Set Up Time	t_{CDS}	100	–	ns
C/D Hold Time	t_{CDH}	10	–	
$\overline{CE}$, $\overline{RD}$, $\overline{WR}$ Pulse Width	$t_{CE}t_{RD},t_{WR}$	80	–	
Data Set Up Time	t_{DS}	80	–	
Data Hold Time	t_{DH}	40	–	
Access Time	t_{ACC}	–	150	
Output Hold Time	t_{OH}	10	50	

Timing Diagram



Block Diagram



Dimensional Outline